

Abstract Submitted
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Effects of sequence disorder on DNA looping and cyclization YURI POPOV, ALEXEI TKACHENKO, University of Michigan — We study the effects of random sequencing in a DNA molecule on the probability of formation of the closed circles (the J- factor). The effects of both the sequence-dependent curvature and the sequence-dependent bending rigidity along the chain are explored theoretically. We demonstrate that random curvature gives rise to the renormalization of the persistence length in the disorder-free results of Shimada and Yamakawa (1984) for the dependence of the J-factor on the length of the molecule. On the other hand, random bending rigidity leads to an increase in the J-factor for short molecule lengths, possibly explaining the discrepancy between the earlier theoretical and the recent experimental results.

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